Video Background Guide

TA-16 Stepladder Accident Investigation

LA-UR-04-6643

Based upon excerpts from the
Los Alamos National Laboratory Investigation of the TA-16-300
Stepladder Accident—Executive Summary (LA-UR-03-3600)

Accident Background and Description

On April 14, 2003, at Los Alamos National Laboratory (hereafter known as the Laboratory) Technical Area 16 (TA-16), Building 300, a worker fell from a stepladder and sustained a multiple compound fracture of the right tibia/fibula. The worker was an employee of Coronado Wrecking and Salvage Company Incorporated (hereafter known as Coronado Wrecking) who was subcontracted to Washington Group International Incorporated (hereafter known as Washington Group).

The worker was standing on the fifth step of an 8-foot fiberglass stepladder. He was using a cutting torch to remove an overhead 6-inch-diameter carbon-steel pipe. When the piece of pipe the worker was cutting fell, it struck the stepladder. As a result, the worker lost his balance, fell off the stepladder, and fractured his right leg.

The Site-Specific Health and Safety Plan (SSHASP) under which the work was performed was inadequate because it did not identify the hazards and controls associated with (1) cutting overhead pipe from a stepladder and (2) letting the pipe fall uncontrolled to the floor. When the process was changed from using scaffolds and scissor lifts to working from a stepladder, the change in operations was not assessed for new hazards. A serious injury occurred as a result of this incident.

Direct Cause of the Accident

The Accident Investigation Team identified the following as the **direct cause** of the accident:

> A section of freefalling pipe struck a stepladder upon which a worker was standing. The impact caused the worker to lose his balance and he ultimately fell, resulting in a compound fracture to his right leg.

Root Causes of the Accident

In general, confusion as to the ownership of the project caused a lack of clarity as to who owned the project and its safety oversight. Though the prime

contractor had accepted full responsibility for safety, they did not provide adequate onsite supervision.

The Accident Investigation Team identified the following specific **root causes**:

1. The Washington Group and Coronado Wrecking failed to identify hazards associated with working on a stepladder while cutting and dropping pipe sections from elevated heights. Washington Group also developed a deficient SSHASP. The SSHASP failed to identify individual tasks. For example, it did not include an analysis of task hazards and task-specific controls related to working off a stepladder while initiating the freefall of pipe. Coronado Wrecking considered this activity as standard industry practice. Controls that could have been in place include (1) securing the stepladder and (2) lowering pipe sections in a controlled manner other than cutting and freefall dropping, and (3) providing a barricade around the stepladder.

2. Washington Group and Coronado Wrecking failed to reassess hazards and controls in the mechanical room as conditions changed. For example, workers could not initially use personnel lifts or scaffolding as secure platforms while removing pipe because (1) the room was congested with pipe and (2) access to the room was limited to a standard-sized door. However, conditions changed as workers removed pipe and other equipment from the room. Despite more space becoming available, the subcontractors failed to use a more stable platform, such as scaffolding.

3. The Engineering Sciences and Applications Division (ESA) failed to actively manage the ES&H aspects of the project on a daily basis.

4. The ESA Safety and Environmental Responsible Line Manager (SERLM) failed to ensure that ES&H oversight was conducted on the project.

Contributing Causes of the Accident

Questions of oversight further contributed to the accident. The Health, Safety and Radiation Protection Division was asked to review the SSHASP, though they were not onsite and had no knowledge of the work methods used.

The Accident Investigation Team identified the following specific **contributing causes**:

1. The Laboratory reviewed and accepted the SSHASP without having involvement in the project or specific knowledge of work methods and practices related to pipe removal.

2. Washington Group oversight of the project was considered inadequate when it came to identifying the specific hazards and controls associated with pipe-removal activities performed in Building 300's subbasement.

3. Washington Group and Coronado Wrecking housekeeping practices were less than adequate in the basement. Poor housekeeping contributed to the accident because freefalling sections of pipe could bounce off a piece of plywood located near to the pipe cutter who was standing on an insecure stepladder. There were also multiple sections of pipe and debris scattered throughout the work area at the time of the accident.

4. Institutional procedures failed to set requirements for consistent management of D&D projects.

5. Construction Management Laboratory Implementation Requirement (LIR) 220-01-01.5 states that any project estimated over $500,000 shall be managed as a project. However, any Laboratory organization is free to manage a project estimated under $500,000. This practice of managing projects based on dollar value does not consider other criteria, such as complexity or ES&H concerns.

Lessons Learned
The primary **lessons learned** from this accident are:

1. Construction Contractors doing D&D require additional and clearer:
   - Institutional oversight
   - Contractual expectations
   - Ownership
   - Consequences if expectations are not met
   - Health and safety analysis that defines the methods of how work will be performed

2. All D&D operations must be centralized by one organization.